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Tagungsband zum 1. Symposium für Ökonomie im Gartenbau am 27. November 2013 in der Paulinerkirche Göttingen

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Thünen Report 22

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Costs and Benefits of GAP Standards Adoption in Thai Horticulture

Rattiya S. Lippe and Ulrike Grote[1]

Abstract

Thailand has increasingly opened its horticultural sector to international competition and put great efforts in assuring product safety and quality from farms to the end point of exporting. At farm level, a set of Good Agricultural Practices (GAP) standards has been introduced by both public and private sectors. The national Q-GAP standard (Q denotes quality) issued by the Thai Ministry of Agriculture and Co-operatives is currently the most important standard for Thai horticultural export-oriented producers. Likewise, private GAP standards such as GLOBALG.A.P. have become important especially in order to maintain accessibility to the lucrative EU market. Against this background, perceived costs and benefits of GAP standards adoption are assessed at the producer level. The analysis is based on collected data from 408 certified and non-certified orchid and mango producers and expert interviews with key informants along the value chains. Perceived costs and benefits will be compared between public and private GAP standards adoption as well as between producers from flowering and fruit sectors.

Key words: Horticulture, Thailand, Good Agricultural Practices (GAP), Orchids, Mango

JEL-Codes: Q13

Zusammenfassung

Thailand hat seinen Gartenbausektor zunehmend dem internationalen Wettbewerb geöffnet und große Anstrengungen unternommen, die Produktsicherheit und -qualität vom Anbau bis zum Export zu gewährleisten. Auf Produzentenebene wurden diverse öffentliche und private Standards zur „Gute landwirtschaftliche Praxis“ (GAP) eingeführt. Der nationale Q-GAP-Standard (Q steht für Qualität), der vom thailändischen Ministerium für Agrarwirtschaft und Kooperativen herausgegeben wurde, ist aktuell der wichtigste Standard für exportorientierte Gartenbauproduzenten. Daneben spielen auch private GAP Standards, wie GLOBALG.A.P., eine wichtige Rolle, um Zugang zu den lukrativen Exportmärkten der EU zu gewährleisten. Vor diesem Hintergrund wurden Einschätzungen zu Kosten und Nutzen, die durch die Einführung eines GAP-Standards auf Produzentenebene in Thailand entstehen, untersucht. Die Analyse basiert auf 408 Befragungen

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von zertifizierten und nicht-zertifizierten Orchideen- und Mangoproduzenten sowie Expertengesprächen entlang der Wertschöpfungsketten. Die Einschätzungen zu Kosten und Nutzen der Einführung eines privaten versus öffentlichen GAP Standards werden zwischen Blumenzüchtern und Obstanbauern verglichen.

Schlüsselwörter: Gartenbau, Thailand, Gute landwirtschaftliche Praxis (GAP), Orchideen, Mango

JEL-Codes: Q13

1 Introduction

Horticultural markets have rapidly changed as a result of globalization, market liberalization and consumers' concerns about safety and quality of the products (Nicola and Fontana, 2010). This phenomenon has spurred supply-side actors to devise strategies to meet the emerging demand and to secure their market access. Accordingly, a wide range of safety and quality standards has evolved in the global horticultural value chain in the past decade. The Good Agricultural Practices (GAP) standard is one important quality assurance system at farm level. It covers environmentally-friendly and socially acceptable management activities during the entire life cycle of production with the aim to ensure product safety and quality (FAO, 2003). Buyers particularly in high income nations such as the European Union (EU) member states are insisting on fresh produce having passed the GAP certification process by independent accredited organizations (Harrison, 2003). Meanwhile several export-oriented developing countries have recognized the importance of GAP schemes and started promoting national GAP standards to help local producers to respond to these challenges with sustainable agricultural production schemes (UNCTAD, 2007).

Thailand has increasingly opened its horticultural sector to international competition and put great efforts in assuring safety and quality level from farm to the end point of exporting (The Mission of Thailand to the European Union, 2010). The country has evolved as the most active tropical Asian nation in promoting a set of GAP standards (Johnson et al., 2009). The national Q-GAP standard (Q denotes quality) issued by the Thai Ministry of Agriculture and Co-operatives (MoAC) in 2004 is currently the most important GAP standard for Thai horticultural export-oriented producers. Q-GAP is covering 128 types of fruits and vegetables (Schreinemachers et al., 2012), as well as orchid flowers. The number of certified farmers has increased from 190,621 in 2008 to 212,000 in 2010, covering a current crop area of 225,000 ha (Wannamolee, 2008; Schreinemachers et al., 2012). The rise can be mainly related to the horticultural food sector, whereas non-food sectors such as orchids have shown decreasing trends in the recent past. Moreover, Q-GAP can be only a viable alternative for producers who have access to regional markets and high-value domestic retail chains as it does not receive broad international recognition. Other lucrative export markets such as in the EU request additional standards being more stringent and comprehensive than Q-GAP (Kersting, 2009). Therefore, private GAP standards such as GLOBALG.A.P. have become important in recent years to maintain market accessibility to the EU market (Ussavasodhi, 2011). The total number of certified GLOBALG.A.P. producers increased to 1,084 in

2008 mainly due to the GLOBALG.A.P. option in two pilot projects initiated by the collaboration between GIZ and FoodPLUS (Kersting, 2009). However, number of GLOBALG.A.P. producers began to decline in the following years with only 277 producers remaining in 2012 (FoodPLUS, 2012).

It is questionable whether primary producers do benefit from complying with such standards. Some studies showed that complying with GLOBALG.A.P. standards increased income level of producers and created long-term relations with buyers and maintained the share in lucrative export markets. Furthermore, positive impacts on environment, workers' health, and increased productivity have been reported as further effects of implementing GLOBALG.A.P. standards at the producer site (Asfaw et al., 2010; Bayramoglu et al., 2010; Dörr, 2009). In contrast, the associated costs of compliance for such private GAP standards increased the probability of exclusion from export markets, particularly evident for small-scale producers (Chen et al., 2008; Aloui and Kenney, 2005; Jenson, 2004). Within the Thai context, a study by Kersting and Wollni (2012) demonstrated that interviewed fruit and vegetable farmers perceived the improvement of product quality, enhancement of farm workers' health, secure market and price premium as the major benefits of GLOBALG.A.P. adoption. Still, questions remain whether costs and benefits of public and private GAP compliance do differ, and if, how different producers perceive these aspects in their own context.

The present study assesses perceived costs and benefits of GAP standard adoption focusing on the difference between (i) national Q-GAP versus GLOBALG.A.P. program, and (ii) horticultural food and non-food producers using mango and orchid as representative sector products. The descriptive analysis is based on collected data from 408 face-to-face producer interviews and expert interviews with key informants of different parts of the value chains.

2 Data Collection and Methodology

For the purpose of this study, the two products orchid and mango were chosen due to their economic importance as export crops from Thailand. A survey was conducted in 2012. Survey locations were selected stratified by the importance of production area and number of certified GAP producers.

Orchids are intensively produced in the Western and Central regions of Thailand. Accordingly, the orchid survey was conducted in five provinces namely Bangkok, Samutsakorn, Ratchaburi, Nakornpatom and Chonburi. In the case of mangoes, production is distributed all over the country but mangoes for export, especially the variety NamDokMai, are grown predominantly in the Eastern region of Thailand where soil conditions and climate are suitable and water is available (PHTRI, 2009). Thus, Chachengsao province was chosen as survey location. Additionally, the mango survey was carried out in Pitsanulok province due to existing GLOBALG.A.P. producers. In the producer survey, we employed the stratified random sampling technique to select the final inter-

viewees. In total, 408 certified and non-certified GAP producers were interviewed (Table 1). A structured questionnaire was used to access information on production, marketing, household and farm characteristics as well as notions on costs and benefits of GAP adoption. Moreover, expert interviews were conducted focusing on exporters, cooperatives, middlemen/collectors and government officers from the Department of Agriculture (DOA) and the Department of Agricultural Extensions (DoAE), the National Bureau of Agricultural Commodity and Food Standards (ACFS) as well as representatives from ThaiGAP and the German Agency for International Cooperation (GIZ) Thailand.

Table 1: Number of interviewed producers

Certifying status	Orchid	Mango
Q-GAP producers	68	80
Former Q-GAP producers	76	-
Non Q-GAP producers	112	64
GLOBALG.A.P. producers	-	8
Total	256	152

Source: Own survey, 2012.

A cost-benefit analysis is applied to find out whether standards adoption and certification can be considered as a sound investment decision from the point of view of the producers. Qualitative information is provided where quantitative figures are missing.

3 Results and Discussion

3.1 Costs of Adoption

Complying with standards entails costs which commonly reduces the adoption ability of producers. Table 2 lists the cost factors related to the compliance with GAP standards as provided by producers and experts. Our findings reveal that costs of compliance, specifically for training, external auditing and annual certification fee, are mostly supported by government agencies in the case of Q-GAP schemes, and by exporters in the case of GLOBALG.A.P. However, producers still have to cover other costs related to farm infrastructure and equipment such as storage room for pesticides, fertilizers and harvested products as well as washing facilities and protective clothing for farm workers. These costs vary depending on the complexity of the chosen GAP scheme. Higher costs for physical upgrading can be expected from the private GAP standards as compared to the public ones. For instance, following GLOBALG.A.P. compliance criteria, the storage facilities must comply with the current national, regional and local legislation and regulation schemes and must be kept secure under lock and key (FoodPLUS, 2013: 42). Such a cost factor can be detrimental to producers without appropriate financial resources.

Table 2: Costs of compliance national Q-GAP versus international GLOBALG.A.P.

Cost category	Thai Q-GAP	GLOBALG.A.P.
Training costs	Supported by government agencies in cooperation with producer groups/cooperatives	Supported by stakeholders (i.e. exporters) in the value chains and donors (i.e. GIZ)
Initial costs for farm infra-structure and equipment	Producers take responsibility	Partly supported by stakeholders, producers also take responsibility
External auditing costs	Free of charge	Supported by stakeholders
Annual certification costs	Free of charge	Supported by stakeholders

Source: Own survey, 2012.

Furthermore, the common GAP task of record keeping was described as a major adoption barrier by interviewed producers (Table 3). For example, formerly certified orchid producers reported that the complexity of record keeping was one reason for leaving the GAP program as time requirements were substantially increasing the workload for producers. Time spent on record keeping for Q-GAP producers is on average two times higher compared to non-certified producers, and even higher in the case of GLOBALG.A.P. (Table 3). This becomes especially important during periods of labor shortage or when labor force of family members is required for other farming activities.

Table 3: Time spent on record keeping

Producer type	Average time spent on record keeping (hour/week)			Prob > |z|
	Non Q-GAP	Q-GAP	GLOBALG.A.P.	
Orchid	0.5	1.3	-	0.000 ***
Mango	0.2	0.7	1.0	0.000 ***

Note: Significance level: *** p <0.01 from Wilcoxon rank-sum (Mann-Whitney) test between certified and non-certified Q-GAP producer groups.

Source: Own calculation based on producer survey.

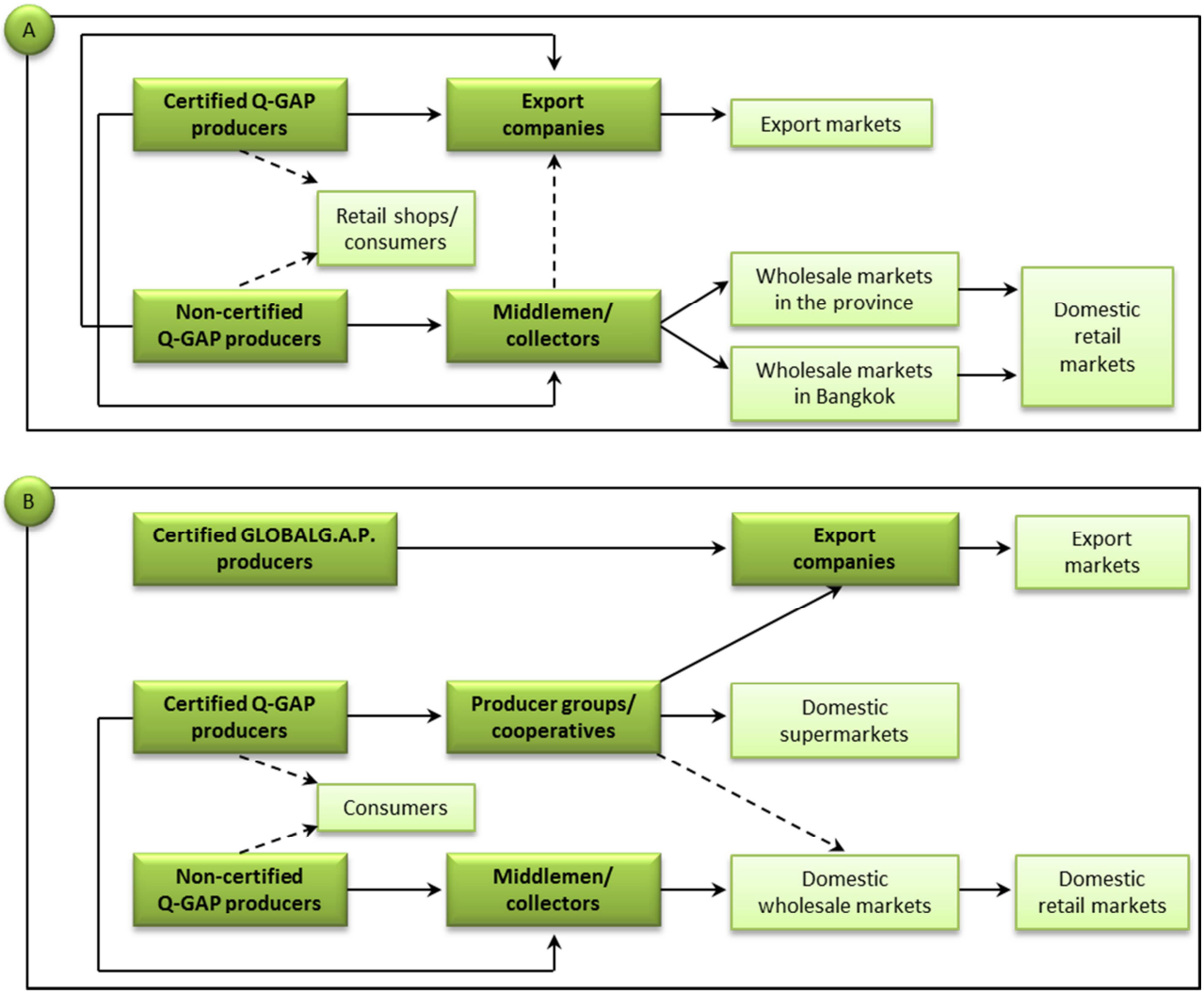
3.2 Benefits of Adoption

The decision of producers to adopt a standard also depends on the benefits which may outweigh the costs of adoption. Generally, producers would expect to profit from standard compliance directly through a price premium. In our case studies, we found that orchid producers do not receive a higher price due to certification in contrast to mango producers. However, mango producers receive a higher price for certified products, only if sold for export and domestic high-value markets. At the time of the survey, farm gate prices for certified Q-GAP and GLOBALG.A.P. mangoes were on average 50 and 100 percent higher, respectively, compared to the convention-

al ones. The significant premium payments for mangoes can be explained with the importance of safety concerns such as pesticide residue levels particularly in the horticultural food sector.

A further benefit of compliance is that standards can be used as a tool to enter and to secure high-value market access. In case of orchids, compliance with GAP standards is not strictly enforced by major buyers such as exporters, middlemen or collectors (Figure 1). This was further confirmed by the sold value to each market channel, showing no significant difference between certified and non-certified Q-GAP orchid producers (Table 4). This could be explained by the fact that Thai orchids are still mainly exported to regional markets, without the necessity of certification, as revealed during the expert interviews. Meanwhile size, number of flower panicles per stem and no signs of pests and diseases are more important criteria to determine product price in this case.

Figure 1: Value chains of A) orchids and B) mangoes in Thailand



Source: Own presentation based on interviews of stakeholders in the value chains.

In the mango value chain, middlemen/collectors are by far the major market channel entry points for producers, without substantial differences between certified and non-certified producers (Table 4). However, certified Q-GAP producers have the additional option of selling their products to producer groups and/or cooperatives which have direct contract arrangements with exporters and domestic supermarkets. This was also confirmed by the significant differences in shares of sales value to this market channel, with about 27 percent from certified producers and 1 percent from non-certified ones (Table 4). In contrast, GLOBALG.A.P. certified producers deal directly with export companies on the basis of contract farming, receiving a guaranteed purchase price and sales volume from the export company with a floor price based on the market price. Furthermore, companies support certified GLOBALG.A.P producers by covering certification costs and trainings related to certification procedure and recorded documents. Additionally, companies also set up collecting stations nearby production areas reducing transportation cost for producers substantially.

Table 4: Share of selected market channel actors from producers' sales value

Market channels	Share of sales value (%)			
	Orchid producers		Mango producers	
	Certified *(n = 68)*	Non-certified *(n = 111)*	Certified *(n = 79)*	Non-certified *(n = 63)*
Exporters	67.2	64.8	7.0 **	0.0 **
Middlemen/collectors	22.4	26.0	51.3 ***	93.1 ***
Producer groups/cooperatives	-	-	27.0 ***	1.2 ***
Wholesale markets	3.7	4.6	1.3	0.3
Direct sales to consumers	4.2	4.1	10.6 ***	4.4 ***
Retail shops	1.3	0.1	-	-

Note: Significance level: * p <0.1; ** p < 0.05; *** p <0.01 from Wilcoxon rank-sum (Mann-Whitney) test.

Source: Own calculation based on producer survey.

Although record keeping appears to be tedious, still, more than 90 percent of the certified producers indicated that these procedures led to an improvement in farm management practices (Table 5). As a result, physical product quality improved which resulted in higher prices with a positive impact on net farm incomes (International Trade Center, 2011). Another benefit from standard compliance is farm workers' health and safety. Most certified producers agreed that production practices following GAP standards' requirements improved farm workers' health and safety (Table 5). For example, farm workers are required to use adequate protective clothing (mask, rubber boots, gloves and long suit protection) especially during pesticide spraying as one of the associated GAP regulations.

Table 5: Attitudes on GAP standards

Statements	% Q-GAP producers agreed on statements		Chi^2 test
	Orchid *(n = 68)*	Mango *(n = 80)*	
GAP standards can be considered as tool to improve farm management	94.1	91.2	0.764
Production practices following GAP standard requirements result in increased product quality	64.7	76.3	0.038 **
Production practices following GAP standard requirements decrease negative effect on farm workers' health and safety	89.7	92.6	0.595

Note: Significant level: ** $p < 0.05$ based on Chi^2 test.

Source: Own calculation based on producer survey.

4 Conclusions

The presented study has assessed costs and benefits of GAP standard adoption, focusing on the national Thai Q-GAP and GLOBALG.A.P. programs as well as comparing the role of GAP standards in the national orchid and mango sector at the producer level. Our findings reveal that producers considered investments in farm infrastructure and equipment as a major cost factor to achieve GAP standards compliance. These investment costs depend on the complexity of standards' requirements, with an expected higher investment rate for GLOBALG.A.P. compared to the public Q-GAP standard. Record keeping usually requires additional workload for producers being noticed as an important cost factor, further hampering the decision to comply.

Results illustrate that mango producers could realize higher prices as a result of certification whereas most orchid producers did not acknowledge this as a major benefit of adoption. The difference in price premium can be also observed between products certified by the national Q-GAP compared to GLOBALG.A.P. standards, while the latter one offers a higher added value. Moreover, GAP standards can secure access to high-value markets especially in the case of certified mango producers. Producers also perceived that increased product quality, improved farm management and improved farm workers' health and safety are additional benefits of adoption.

National Q-GAP is likely to be a viable alternative for small-scale producers in Thailand due to lower investment requirements and complexity in documentation procedures. However, this would count only for producers who have access to regional markets and domestic high-value retail channels. Meanwhile, complying with GLOBALG.A.P. offers access to other lucrative markets, such as the EU. Therefore, GAP standards particularly the private ones can be considered as an upgrading strategy for the value chain of horticultural products as a whole.

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